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## From H1 data on $\rho'$ , $\rho''$ production to four-pion production in UPC

*Wednesday, 25 March 2020 11:00 (18 minutes)*

The central issue of the presentation will be theoretical study of four charged pion photoproduction that come from ultraperipheral heavy-ion collision. I take into account the single photoproduction of the radial excitations of the  $\rho^0$  vector meson. The analysis includes a contribution from the incoherent sum of the  $\rho'(1450)$  and  $\rho''(1700)$  vs single  $\rho(1570)$  vector mesons. I will show that my theoretical model has very good agreement with the experimental data for  $\text{PbPb} \rightarrow \text{PbPb}\pi^+\pi^-$  mechanism. The proposed phenomenology works for the photoproduction of vector meson that decays into a two-pion channel thus using a new H1 experiment data for  $\gamma p \rightarrow 2\pi^+2\pi^-$  process one can make predictions for four charged pions productions in ultra-peripheral heavy ion collisions. I will present the differential and total cross section for the  $\text{PbPb} \rightarrow \text{PbPb}2\pi^+2\pi^-$  process. Finally, I have got even one order of magnitude larger (at midrapidity) cross section than it was predicted using STARlight generator. Obtained results constitute a comprehensive analysis of  $\rho^0(770)$  meson excited states that decay into  $2\pi^+2\pi^-$  channel.

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